

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-19 (Cancelled).

Claim 20 (Currently Amended): A process for preparing 3-cyano-3,5,5-trimethylcyclohexanone (isophoronenitrile), [[by]] comprising reacting isophorone with hydrogen cyanide in the presence of a base as a catalyst to form a crude isophoronenitrile product selected from alkali metal and alkaline earth metal cyanides, alkali metal and alkaline earth metal hydroxides, alkali metal and alkaline earth metal oxides and alkali metal and alkaline earth metal alcoholates to obtain a crude isophoronenitrile product, and

subsequently distilling the crude isophoronenitrile product to prepare the isophoronenitrile,

wherein the base is selected from the group consisting of an alkali metal cyanide, an alkaline earth metal cyanide, an alkali metal hydroxide, an alkaline earth metal hydroxide, an alkali metal oxide, an alkaline earth metal oxide, an alkali metal alcoholate and an alkaline earth metal alcoholate,

wherein, before the distilling, which comprises adding, before a distillation, at least one sulfonic acid is added,

wherein the at least one sulfonic acid is selected from the group consisting of methanesulfonic acid, a naphthalenesulfonic acid, an alkyl-substituted naphthalenesulfonic acid, an alkyl-substituted benzenesulfonic acid having an alkyl radical having greater than or equal to 4 carbon atoms, and combinations thereof, and

wherein the addition of the at least one sulfonic acid neutralizes the base in such a way that no sedimenting precipitates occur or carboxylic acid selected from the group consisting of

~~R-SO₃H~~

~~where R is a linear or branched C₁ to C₂₄ alkyl radical which may optionally be substituted by CO₂R' where R' is hydrogen or an alkyl radical, or by a phosphonic acid group, a phenyl radical substituted by linear or branched C₂ to C₂₄ alkyl radicals, nitro, sulfo or hydroxyl groups; or a substituted or unsubstituted fused aromatic radical; aliphatic polysulfonic acids; condensates of naphthalene or phenolsulfonic acids, aliphatic polycarboxylic acids; and~~

~~R"-CO₂H~~

~~where R" is a linear or branched C₂ to C₂₄ alkyl radical which may optionally be substituted by one or more phosphonic acid groups; a phenyl radical which is unsubstituted or substituted by linear or branched C₁ to C₂₄ alkyl groups, nitro, sulfo or hydroxyl groups; or an unsubstituted or substituted fused aromatic radical.~~

Claim 21 (Currently Amended): The process ~~as claimed in~~ of claim 20, wherein the carboxylic acid ~~or at least one~~ sulfonic acid is added in an amount of 1 acid equivalent, based on 1 base equivalent of the base used as the catalyst.

Claim 22 (Currently Amended): The process ~~as claimed in~~ of claim 20, wherein the base used as the catalyst is used in an amount of from 0.01 to 20% by weight, based on the isophorone used.

Claim 23 (Currently Amended): The process ~~as claimed in~~ claim of claim 20, wherein the ~~reaction reacting~~ is carried out at temperatures of from 80 to 220°C, preferably from 120 to 200°C, more preferably from 150 to 200°C.

Claim 24 (Currently Amended): The process ~~as claimed in~~ of claim 20, wherein the ~~reaction reacting~~ is carried out at a pressure of from 1 to 5 bar, ~~preferably from 1 to 3 bar.~~

Claim 25 (Currently Amended): The process of ~~as claimed~~ claim 20, wherein the ~~distillation distilling~~ is carried out in a rectification column.

Claim 26 (Currently Amended): The process ~~as claimed in~~ of claim 20, wherein the ~~reaction reacting~~, the addition of the ~~at least one~~ sulfonic acid, ~~or carboxylic acid~~ and the subsequent ~~distillation distilling~~ are carried out continuously.

Claim 27 (Cancelled).

Claim 28 (Currently Amended): A process for preparing 3-cyano-3,5,5-trimethylcyclohexanes trimethylcyclohexane (isophoronenitrile), comprising ~~the following steps:~~

a) ~~reacting isophoronenitrile synthesis by reaction of isophorone with hydrogen cyanide in the presence of a base as a catalyst selected from alkali metal and alkaline earth metal cyanides, alkali metal and alkaline earth metal hydroxides, alkali metal and alkaline earth metal oxides and alkali metal and alkaline earth metal alcoholates to obtain a reaction mixture comprising a crude isophoronenitrile product,~~

b) ~~neutralization of neutralizing the reaction mixture from obtained in step a) with [[a]] at least one sulfonic acid to obtain a neutralized reaction mixture or carboxylic acid selected from the group consisting of~~



where R is a linear or branched C₁ to C₂₄-alkyl radical which may optionally be substituted by -CO₂R' where R' is hydrogen or an alkyl radical, or by one or more phosphonic acid groups, a phenyl radical substituted by linear or branched C₂ to C₂₄-alkyl radicals, nitro, sulfo or hydroxyl groups; or a substituted or unsubstituted fused aromatic radical; aliphatic polysulfonic acids; condensates of naphthalene or phenolsulfonic acids, aliphatic polycarboxylic acids; and



where R'' is a linear or branched C₂ to C₂₄-alkyl radical which may optionally be substituted by one or more phosphonic acid groups; a phenyl radical which is substituted by linear or branched C₁ to C₂₄-alkyl groups, nitro, sulfo or hydroxyl groups; or an unsubstituted or substituted fused aromatic radical,

c) distillation of distilling the neutralized reaction mixture obtained in step b),

wherein the base is selected from the group consisting of an alkali metal cyanide, an alkaline earth metal cyanide, an alkali metal hydroxide, an alkaline earth metal hydroxide, an alkali metal oxide, an alkaline earth metal oxide, an alkali metal alcoholate and an alkaline earth metal alcoholate;

wherein the at least one sulfonic acid is selected from the group consisting of methanesulfonic acid, a naphthalenesulfonic acid, an alkyl-substituted naphthalenesulfonic acid, an alkyl-substituted benzenesulfonic acid having an alkyl radical having greater than or equal to 4 carbon atoms, and combinations thereof; and

wherein the addition of the at least one sulfonic acid neutralizes the base in such a way that no sedimenting precipitates occur.

Claims 29-33 (Cancelled).

Claim 34 (Currently Amended): A method for avoiding precipitates in the neutralization of a base selected from alkali metal and alkaline earth metal cyanides, alkali metal and alkaline earth metal hydroxides, alkali metal and alkaline earth metal oxides and alkali metal and alkaline earth metal alcoholates used as a catalyst in the reaction of isophorone with hydrogen cyanide in the presence of said base, the method comprising the step of adding [[a]] at least one sulfonic selected from the group consisting of naphtahlenesulfonic acids, alkyl-substituted naphthalenesulfonic acids and alkyl-substituted benzenesulfonic acids having an alkyl radical having > 4 carbon atoms as a neutralizing agent before a distillation of a crude isophoronenitril product which has been obtained by said reaction,

wherein the base is selected from the group consisting of an alkali metal cyanide, an alkaline earth metal cyanide, an alkali metal hydroxide, an alkaline earth metal hydroxide, an alkali metal oxide, an alkaline earth metal oxide, an alkali metal alcoholate and an alkaline earth metal alcoholate; and

wherein the at least one sulfonic acid is selected from the group consisting of methanesulfonic acid, a naphthalenesulfonic acid, an alkyl-substituted naphthalenesulfonic acid, an alkyl-substituted benzenesulfonic acid having an alkyl radical having greater than or equal to 4 carbon atoms, and combinations thereof; and

wherein the addition of the at least one sulfonic acid neutralizes the base in such a way that no sedimenting precipitates occur.

Claim 35 (Currently Amended): The process ~~as claimed in~~ of claim 20 [[32]], wherein the at least one sulfonic acid is diisobutylnaphthalenesulfonic acid or dodecylbenzenesulfonic acid.

Claim 36 (Currently Amended): The ~~method as claimed in~~ method of claim 28 [[34]], wherein the at least one sulfonic acid is diisobutylnaphthalenesulfonic acid or dodecylbenzenesulfonic acid.

Claim 37 (Currently Amended): The process ~~as claimed in~~ of claim 20, wherein the base is sodium cyanide and the at least one sulfonic acid ~~or carboxylic acid~~ is selected from the group consisting of ~~toluenesulfonic acid~~, methanesulfonic acid, diisobutylnaphthalenesulfonic acid, dodecylbenzenesulfonic acid and combinations thereof ~~2-ethylhexanoic acid~~.

Claim 38 (Currently Amended): The method ~~as claimed in~~ of claim [[30]] 20, wherein the at least one sulfonic acid ~~or carboxylic acid~~ is selected from the group consisting of ~~toluenesulfonic acid~~, methanesulfonic acid, diisobutylnaphthalenesulfonic acid, dodecylbenzenesulfonic acid, and combinations thereof; ~~and 2-ethylhexanoic acid~~, and the base is sodium cyanide.

Claim 39 (New): The process of claim 20, wherein the reacting is carried out at temperatures of from 120 to 200°C.

Claim 40 (New): The process of claim 20, wherein the reacting is carried out at temperatures of from 150 to 200°C.

Claim 41 (New): The process of claim 20, wherein the reaction is carried out at a pressure of from 1 to 3 bar.